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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/681,821	06/11/2001	Ji-Cheng Zhao	RD-26970	6874

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EXAMINER

MCNEIL, JENNIFER C

ART UNIT	PAPER NUMBER
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1775

DATE MAILED: 10/02/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/681,821

Applicant(s)

ZHAO ET AL.

Examiner

Jennifer McNeil

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 September 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-47 is/are pending in the application.
- 4a) Of the above claim(s) 41-47 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-40 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-40, drawn to an article, classified in class 428, subclass 632.
- II. Claims 41-47, drawn to a method of making an article, classified in class 427, subclass 252.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product may be made by a materially different process. Instead of disposing a diffusion barrier layer between the substrate and the coating, the coating layers may be formed in a mold, the substrate cast onto the coating in the mold, the article removed from the mold.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

During a telephone conversation with Noreen Johnson on August 6, 2002 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-40. Affirmation of this election must be made by applicant in replying to this Office action. Claims 41-47 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

Claims 1, 2, 5, 7, 10, 21, 23, 24-33, 37, 39, and 40 are rejected under 35 U.S.C. 102(b) as being anticipated by Chesnes (US 5,916,518). Chesnes teaches a cobalt-base composition for use as a braze alloy. The alloy may comprise up to 40 wt% Cr, up to 15 wt% Re, up to 12 wt% Al, 7 wt% W, and 10 wt% Ni (col.6). Chesnes also teach that the coating may be provided with an overcoat of an aluminide, MCrAlY type overlay, and ceramics. Typically metal coating may be used as a bonding coat for a ceramic topcoat (col. 14, lines 52-67).

Claims 1-4, and 10-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Schmitz et al (US 5,993,980). Schmitz et al teach a protective coating wherein the coating may comprise 25-29 wt% Co, 15-35 wt% Cr, 7-18 wt% Al, 5-20 wt% Re, and the balance Ni (col. 3, lines 34-48).

Claims 1-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Czech et al (US 5,582,635). Czech et al teach a protective coating wherein the coating may comprise 25-40 wt% Ni, 28-32 wt% Cr, 7-9 wt% Al, and 0-15 wt% of Re or W (col. 2, lines 9-25).

Claims 1, 3, 4, 13, 14, 16, and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Jackson (US 4,980,244). Jackson teaches a protective coating of a CrRuAl alloy. The coating may have

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concentrations of the three elements as shown in Figure 1, and as given in Table III. For example, 35.1 wt% Cr, 50.9 wt% Ru, and 13.7 wt% Al.

Claims 1-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Czech et al (US 5,273,712). Czech et al teach a protective coating that may comprise 1-20 wt% Re, 15-50 wt% Cr, 0-15 wt% Al, 0-12 wt% W, and the balance Fe, Ni, or Co (col. 2, lines 28-62).

Claims 1-7 are rejected under 35 U.S.C. 102(e) as being anticipated by Nazmy et al (US 6,245,447). Nazmy et al teach an iron aluminide coating that may comprise 5-35 wt% Al, 15-25 wt% Cr, 0.5-10 wt% W, and the balance iron.

Claims 1, 10, 13-15, 18-22, 26-33, and 35-39 are rejected under 35 U.S.C. 102(e) as being anticipated by Spitsberg et al (US 6,306,524). Spitsberg et al teach a diffusion barrier comprising 15-35 wt% Ru, 10 wt% Cr, and the balance Co. The diffusion barrier may also comprise 10-20 wt% Ru and the balance Cr. The barrier may also comprise 12-21 wt% Al, a total of W and Al of 23-27 wt%, and the balance Ni. The barrier coating also has a coating adhered thereto that is an MCrAlY, a PtAl, or a NiAl coating (see claims 4, 6, 13, 14, 30, 52). The thickness of the barrier layer may be 5-100 microns (col. 7, lines 1-5). The purpose of the barrier layer is to be thermodynamically stable, such that phase transformations occur very slowly or not at all, and it is sufficiently bonded to the superalloy and the overcoat so that thermal cycling will not result in spallation due to cycling fatigue. Spitsberg also teaches a final coating of zirconia (claim 51).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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Claims 21, and 23-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Czech et al (US 5,582,635) in view of Spitsberg et al (US 6,306,524). Czech et al teach a protective coating wherein the coating may comprise 25-40 wt% Ni, 28-32 wt% Cr, 7-9 wt% Al, and 0-15 wt% of Re or W, as discussed above. Czech et al do not include an overcoat of an aluminide or an MCrAlY for the protective coating. As discussed above, Spitsberg et al teach a diffusion barrier comprising 15-35 wt% Ru, 10 wt% Cr, and the balance Co, and the barrier coating also has a coating adhered thereto, such as an MCrAlY, a PtAl, or a NiAl coating. The additional layers of Spitsberg provide increased corrosion resistance to the turbine component and therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to apply the topcoats of Spitsberg to the protective coating of Czech. Regarding claim 34, a nickel-chromium alloy may be a MCrAlY type coating. Such coatings are well-known in the art and absent a showing of unexpected results, a person of ordinary skill would be able to optimize the composition of the MCrAlY such that its oxidation and corrosion resistance capabilities are maximized.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer McNeil whose telephone number is 703-305-0553. The examiner can normally be reached on Monday through Friday, 9:30AM-6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah Jones can be reached on 703-308-3822. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Jennifer McNeil
Examiner
Art Unit 1775



JCM
September 30, 2002



DEBORAH JONES
SUPERVISORY PATENT EXAMINER